



Mr. Simon Toogood
Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre
5102 – 50th Ave
PO BOX 938
YELLOWKNIFE NT X1A 2N7

MAY 3 0 2017

Dear Mr. Toogood:

EA1617-01 Tłįchǫ All-season Road Adequacy Statement Response Technical Review Session May 17th, 2017

On May 17, 2017, the Government of the Northwest Territories hosted a technical review session pertaining to the Tłįchǫ All-season Road Project (the Project). The purpose of the technical review was to assist federal departments and Indigenous governments and organizations with understanding the technical aspects of the development and results of the effects assessment presented in the Adequacy Statement Response. Additionally, this was a chance to briefly discuss the Project's Environmental Assessment (EA) schedule and provided an opportunity for attendees to ask questions to both the Proponent and the Proponent's technical experts.

Various themed presentations were delivered such as project history, description and procurement, fisheries, wildlife, socio-economics, and next steps in the EA process. Topics discussed included:

- The differences with the assessment analysis for the Socio-Economics Assessment;
- The differences between various culvert designs, longevity and any anticipated issues with permafrost;
- Data used for baseline fish projections; and
- The relevance of winter roads, seasonality and operational dates.

.../2

The enclosed meeting notes and presentation slides provides for a more fulsome summary of the meeting.

A smaller technical review session was held on Thursday, May 25, 2017, for the Wek'èezhìi Renewable Resources Board and the Yellowknives Dene First Nation as both groups were unable to attend the May 17th meeting. A brief summary of this meeting will be made available shortly.

If you have any questions or comments, please contact me at (867) 767-9089 ext. 31194 or by email at Michael_Conway@gov.nt.ca at your earliest convenience.

Sincerely,

Michael Conway

Regional Superintendent

North Slave Region

Department of Infrastructure

Enclosure

c. Meeting Attendees



TASR-ASR TECHNICAL REVIEW SESSION NOTES

DATE May 17, 2017 **PROJECT No.** 1665943

LOCATION Explorer Hotel – Janvier Room

TIME 8:30 am to 12:30 pm

PRESENT Federal Agencies and Governments:

Besner, Rachelle, Natural Resources Canada (NRCan) (via phone) Flagler, Maureen, Indigenous and Northern Affairs Canada (INAC)

Nicol, Emily, ECCC (via phone)

Paradis, Adrian, Canadian Northern Economic Development Agency (CanNor)

Pinto, Melissa, ECCC (via phone)

Schweitzer, Tara, Department of Fisheries and Oceans Canada (DFO) (via phone)

Golder Associates Ltd.:

Coulton, Dan Grabke, Michele O'Brien, Jesse Stevens, Cam

Government of Northwest Territories:

Campbell, Darren, Lands Mahoney, Kelly Education, Cultural and Employment (ECE) McGregor, Laurie, Environment and Natural Resources (ENR) Mountain, Lara, Infrastructure (INF)

Mulders, Tamika, Lands Neudorf, Russell, INF Rozestraten, Katie, INF Seale, Lorraine, Lands Shafi, Arusa, Lands Zimmerman, Nancy, INF

Indigenous Governments and Organizations:

Gibson, Ginger, Tłycho Government (TG)

Harman Jr., Allan, North Slave Métis Alliance (NSMA)

Heron, Tim, Northwest Territories Métis Nation (NWTMN) (via phone)

Land and Water Boards:

Cliffe-Phillips, Mark, Mackenzie Valley Environmental Impact Review Board (MVEIRB)

Ehrlich, Alan, MVEIRB

Elsasser, Sarah, Wek'èezhìi Land and Water Board (WLWB)

Mansfield, Kate MVEIRB Toogood, Simon, MVEIRB



GNWT Tłįchǫ All-Season Road – Adequacy Statement Response (TASR-ASR) Technical Review Session Notes

Notes	Response/Action
 Introductions Review Agenda + H&S Proponent Technical Session will be recorded for internal reference 	No response/action.
Presentation as per slide deck	No response/action.
 Presentation as per slide deck Overview of Methods used for the assessment (refer to sections 3, 4, and 5 of ASR) Four main documents: ASR, TOR, ASR, PDR (ASR + PDR = DAR) Pathway Analysis Method – start with all interaction between project and the environment (Effects Pathway) and focus the EA on the Primary Pathways No linkage – no change to the environment or valued component Secondary Pathway – non measureable or negligible Primary Pathway – focused, detailed analysis, may include modelling or GIS work, where there is an environmental change or a measureable change to the valued component Classify and assess residual effects The mitigation that is listed in the ASR is 	 [Question] Kate Mansfield (MVEIRB) – Will Jesse talk about some of the differences with the assessment analysis with the Socio- Economics Assessment? [Response] Jesse (Golder) – Yes, we will discuss this and go into more detail on the process in the Socio- Economic section.
Presentation as per slide deck	• [Question] Alan Ehrlich (MVEIRB) –
 Lake Whitefish and Ciscoes combined as "Whitefish species" Cannot assess endpoints in the field but can measure environmental indicators; any changes in the indicators help determine if there is a change in an assessment endpoint. RSA: (map) darker blue coloured areas are part of the RSA. 	Are embedded culverts the same as a bottomless culvert? • [Response] Cam (Golder) – Essentially the same, very similar in function, intention is to maintain the habitat that is there. One is an arch and one is a circle. • [Question] Tara (DFO) – Does the
	 Introductions Review Agenda + H&S Proponent Technical Session will be recorded for internal reference Presentation as per slide deck Overview of Methods used for the assessment (refer to sections 3, 4, and 5 of ASR) Four main documents: ASR, TOR, ASR, PDR (ASR + PDR = DAR) Pathway Analysis Method – start with all interaction between project and the environment (Effects Pathway) and focus the EA on the Primary Pathways No linkage – no change to the environment or valued component Secondary Pathway – non measureable or negligible Primary Pathway – focused, detailed analysis, may include modelling or GIS work, where there is an environmental change or a measureable change to the valued component Classify and assess residual effects The mitigation that is listed in the ASR is what the GNWT is committed to at this point Presentation as per slide deck Lake Whitefish and Ciscoes combined as "Whitefish species" Cannot assess endpoints in the field but can measure environmental indicators; any changes in the indicators help determine if there is a change in an assessment endpoint. RSA: (map) darker blue coloured areas are



- Baseline Fish and Fish Habitat: Lake Trout are also in the larger lakes; the waterbodies involved are very productive.
- Fish Harvesting: Subsistence and Recreational (primarily in Lac La Martre)
- Pathway Analysis: blasting is an example of a no-linkage pathway – if/when blasting occurs (borrow pits) the plan is reviewed by appropriate agencies.
- Restricted Activity Period: Dates based on DFO's website and information, and species expected at crossing
- Clear Span Bridges at Crossing 8, 9 14, and 15: abutments almost completely eliminate the effects to fish habitat.

- GNWT anticipate issues with permafrost for embedded culverts or is that not a problem/issue in this (geographic) area?
- [Response] Cam (Golder) defers to GNWT.
- [Response] Russell Neudorf (GNWT
 – INF) Generally we do not have as
 much permafrost at stream
 crossing. However, permafrost
 along the crossings will have to be
 considered in the design of the road
 and crossings.
- [Question] Ginger Gibson (TG) how often do the culverts need to be replaced?
- [Response] Cam (Golder) defers to GNWT
- [Response] Russell Neudorf (GNWT INF) A 40 year lifespan is the assumption; however, this changes depending on circumstances (installation and geotech.). There is a GNWT program that monitors culverts annually as well as a program to replace culverts as they reach the end of their lifespan.
- [Question] Ginger Gibson With regard to the baselines used for fish projections, what was the assumption for year to start with?
- [Response] Cam (Golder) we used GNWT and federal stats for recreational fishers and TK for describing baseline fishing pressures. The idea was to essentially look at how many people are fishing, how many fish are being removed (biomass) and what the lakes in that region can support in terms of biomass and number of fish for that fishery to be self-sustaining. At the end of the day the fishing pressure and the existing harvesters tend to be far below what we think the area can support. Our conclusions align with the DFO literature, and similar studies done elsewhere (Alaska)



Break Start: 10:25am End: 10:45 am	• n/a	and so with the addition of the road there is no reason to believe that the fisheries would be at risk and the fishing pressure is nowhere near where that fishery would be at risk. See section 3 for actual numbers. Most fishermen/women don't generally go far to fish. They may make one trip/year to Lac La Martre, but not every weekend. They will remain near Yellowknife or Edmonton. The area will remain relatively remote. • n/a
End: 10:45 am		
Wildlife (Golder – Dan Coulton)	 [slide 54] Summarize key pathways a. Habitat loss b. Sensory disturbance c. Competition 	[Question] Ginger Gibson: Can you explain again the relevance of winter roads? Due to the seasonality, can you clarify the
Start: 10:47 am	c. Competition d. Vehicle collisions	impacts of this?
End Questions: 11:17 am	 d. Venicle collisions e. Harvest from improved access f. Residual effects assessment [slide 55] TK inclusion a. Traditional Knowledge (TK) was considered to support the assessment, such as including valued components (i.e. moose, caribou and bison) b. Helped quantify existing conditions and effects pathways [slide 56/57] Species at risk consideration, particularly boreal and barren-ground caribou a. Measured spatial and temporal boundaries [slide 64] Key mitigation considered a. Alignment follows existing disturbance and limiting footprint b. Minimize sensory disturbances c. No hunting policy, blocking access roads to borrow sites d. Environmental monitors present to help protect wildlife [slide 75] Present conclusions a. Caribou and wildlife habitat remains largely intact 	• [Response] Dan (Golder): INF has data that shows the operational dates for different winter roads in the region back through time and when those roads can go into operation. The trend is that they are opening later in the year. Operating season is getting shorter and the date that they can be constructed is becoming later in the year. Sometime in the future it may not be feasibly to build winter roads. Barren-ground caribou are migratory and leave the area to calving areas in early to mid-April and so once they are gone they won't be available to harvest for increased access. Related to access to the study area beyond the project.
Socio-Economic	• [slide 81] Assessment of Socio-Economic	No Questions.
	Effects: Greyed out text of table – indicates	



(Golder –Jesse O'Brien)

Start: 11: 17 am

End: 12:00 pm

areas that were not carried forward.

- a. Archaeology sites/culturally significant areas – new sites were not identified, and it acknowledged that the majority of the project occurs in already disturbed areas.
- b. Housing/utilities existing housing situation is constrained. It is expected that the development and subdivision of 20-25 lots could occur in association with in-migration. Planned infrastructure expansions to roughly accommodate approximately 800 community members in comparison to the current population of just over 500 people. Community could handle the gradual influx of 50 families. Identified the potential for an effect; but likely not beyond capacity of community to respond in the face of limited inmigration.
- c. Time for traditional activity/harvesting under Economic Wellbeing – TASR is not anticipated to impact economic wellbeing but Time for traditional activity/harvesting are assessed separately under Traditional Use, Cultural and Heritage Resources.
- [slide 82] Employment and Economy: neutral
 (~) effect to the nature or viability of existing
 businesses (Whatì community store) key is
 adaptive management. Store may adapt to
 include expediting/wholesale supply to
 mineral/industrial development.
- [slide 84] Community Cohesion: Arguably the most difficult to discuss section because impacts relate to complex situations with systemic issues influenced by historical (e.g., residential schools) and contemporary (e.g., existing drug and alcohol issues) factors. Effects are not easily mitigated. Fortunately, a great amount of work has been done to establish authorities to oversee social issues in the community (listed in presentation). Residual effects assessment is less useful here. The key is identifying those with the authority to oversee and respond to social changes in the community, should they occur.
- [slide 86] Equity and Vulnerability: greyed two way arrows indicate both positive and negative effects i.e. Youth – positive



Next Steps in EA Process	opportunities included access to education, opportunities outside community, traditional lands. Youth also expressed negative concerns in access to drugs and alcohol. Another negative concern brought up was using the road to access larger centers may result in a loss of traditional knowledge and language transfer should youth leave more frequently. Islide 87] Traditional Use, Way of Life and Harvesting: Harvesting discussed in fisheries and wildlife sections. Currently in technical review stage, Information Requests due at the end of May,	No comments/questions
(GNWT – INF	INF will draft responses to IRs (currently anticipating responding by the end of June	
Katie Rozestraten)	but will depend on IRs), then a date can be set for the technical session.	
Start: 12:01pm	GNWT is considered the developer and	
End: 12:05pm	 decision maker GNWT will work with federal ministers and Tłįchǫ Government during decision phase 	
Lunch	• N/A	• N/A

Open Question and Answer Session:

Russell Neudorf asked the meeting participants present if they felt there was a need for Q/As after the presentations. The participants unanimously elected not to proceed with a Q/A session.

Additional Notes:

As a result of technical difficulties with the conference call system, phone participants were disconnected from the meeting at around noon, which was when Katie Rozestraten (INF) was summarizing the next steps in the EA. Shortly after, the meeting came to a close. The technical difficulties were only brought to attention after the meeting concluded. In order to ensure that the phone participants had an equal opportunity to express their comments and ask any remaining questions, Darren Campbell (Lands) followed up with these participants by email and also provided them with an electronic version of the presentation. There have been no additional questions or comments from the telephone participants to date.

An additional meeting for WRRB and YKDFN has been scheduled for Thursday, May 25, 2017, as both groups were unable to attend the May 17th meeting.



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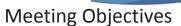


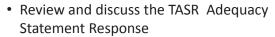
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- Updated project description
- Results of the effects assessment
- · Present and discuss the Board's EA schedule
- Have engaging conversations and answer questions you have!



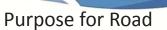


- Early 2011, both governments came together under Tłįcho Roads Steering Committee (TRSC)
- Overall vision has been to pursue development of an allseason road, and Project Description Report (PDR) work began in 2012
- The route would end at the boundary of the community government of Whatì and predominantly follow 'Old Airport Road', an existing overland alignment that was used up until the late 1980s as an overland winter road

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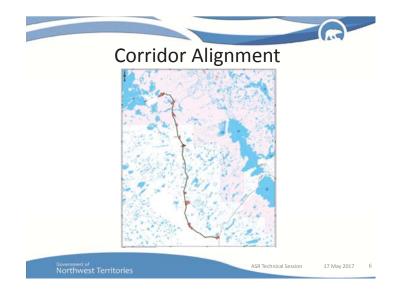
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- Improve access to services
- · Reduce cost of living
- Employ NWT residents
- Connect communities

Government of ASR Technical Session 17 May 2017 5
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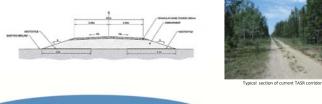


Right of Way

- 60 metre Right of Way (ROW) selected to avoid sensitive terrain
- A 17km length of the route of the road is situated on lands owned and controlled by the Tłįcho Government (TG), known as Tłįcho Lands
- GNWT and TG are in negotiations for land exchange agreement, however, full access will be available during construction

Technical Scope

- Key components of the Project include the following:
 - Construction of a two lane all-season gravel road 94km long
 - Construction of 15 water crossings (11 large culverts and 4 bridges)
 - Construction of smaller drainage culverts as required



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May 2017

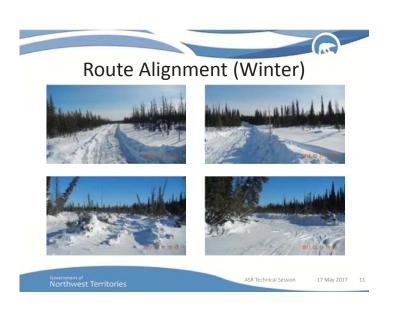
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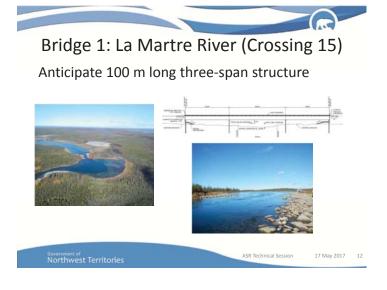


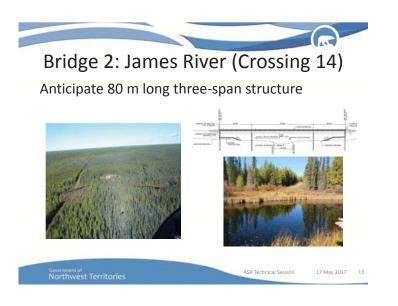
ITEM	STANDARD
Designation	RLU 80
Design Speed	80 km/h
Finished Roadway Width	8.50 m (3.50 m lanes and 0.75 m shoulders)
Normal Side Slopes	3:1
Minimum Surface Gravel	200 mm
Bridge Design Loading	CL-800

- Geometric Design Guidelines published by the Transportation Association of Canada (TAC).
 CAN/CSA S6 14



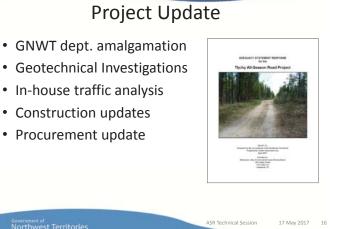














GNWT Dept. Amalgamation

- As of April 1st, 2017, the following departments amalgamated:
 - The Departments of Transportation and Public Works and Services merged to the new Department of Infrastructure (INF)
 - The Departments of Executive and Aboriginal Affairs and Intergovernmental Relations merged to Department of Executive and Indigenous Affairs (EIA)
 - The Departments of Finance and Human Resources merged to become the Department of Finance (FIN)

Geotechnical Program

W2016S0009

Phase I - completed

65 Boreholes along alignment

16 Boreholes at bridge and culvert locations

Includes laboratory testing and logs



Geotechnical Program

Phase II – to be completed by August 2017

Amendment to W2016S0009 approved by WLWB on May 2, 2017

13 Borrow sources

Includes test results and detailed logs



Traffic Forecast

- Road design to be built to account for maximum annual average daily traffic (AADT) of 200
- Traffic analysis conducted estimated 20 40 vehicles per day, which includes NICO Mine traffic
- Typical usage of the road will include general public travel and community resupply. In addition, there could be development of potential mines in the region.



Construction Updates

- ASR Appendix B: Tentative construction schedule
 - Timing dependent on Preferred Proponent
 - One spread or two spreads
 - Estimated start by Sept. 2018 and finished in 2022
- Borrow sources
 - 13 sources were included in effects assessment
 - Preferred Proponent will determine which need to be developed
 - May require more than 4-5 sources but overall disturbance should be the same.
- Camps & wastewater
 - Large 150-man camp may not need to move with construction
 - Smaller 20-man camps may be used at various times
 - Wastewater disposal will differ between large and small camps
 - Sumps for greywater preferred

Government of Northwest Territories ASR Technical Session

17 May 2017



- Jan. 11, 2017, conditional approval of federal funding annualized
- RFQ issued by GNWT on March 20, 2017 and closes on June 9, 2017
- RFQ is the first stage in a competitive selection process for the project
- When procurement process is complete, the Preferred Proponent will design, build, finance, operate and provide maintenance, repair for the TASR for a 25 year period

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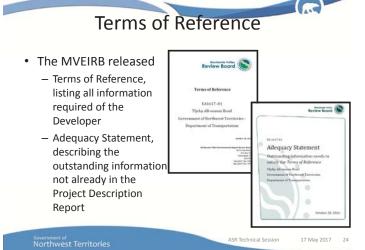
ASR Technical Session

17 May 2017



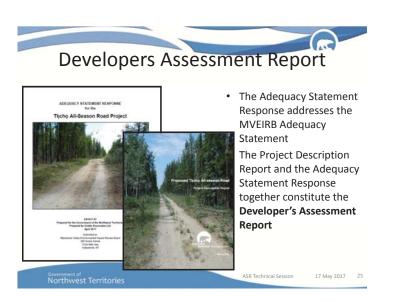
Assessment Overview

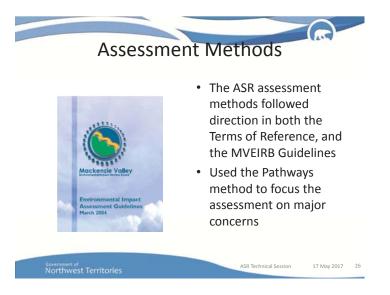
- Terms of Reference and Adequacy Statement
- PDR and ASR
- · Assessment Methods
- Mitigation

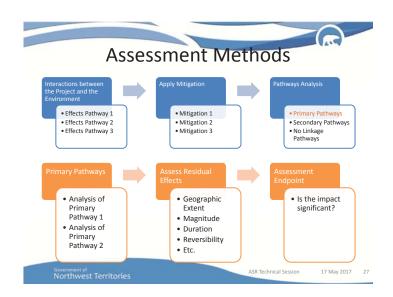


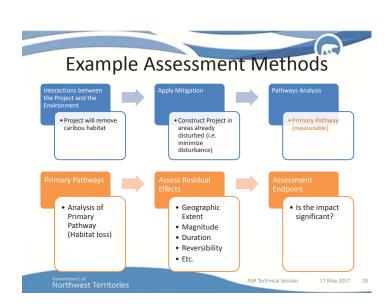
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17 May 2017 23











Mitigation

- Actions or procedures to reduce environmental impacts
 - Ex. Clearing vegetation in winter avoids nesting birds
- Mitigation identified in the PDR were reevaluated and refined for the ASR
- Mitigation Hierarchy
 - Avoidance
 - Minimization
 - Rehabilitation/ Restoration
 - Offset

ASR Technical Session

17 May 2017

Adequacy Statement Response

- Adequacy Statement focuses on:
 - Fish and Fish Habitat
 - Wildlife and Wildlife Habitat
 - Socio-Economics
- Golder was contracted by GNWT to assist with the Adequacy Statement Response
 - Cam Stevens: Fish and Fish Habitat
 - Dan Coulton: Wildlife and Wildlife Habitat
 - Jesse O'Brien: Socio-Economics

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ASR Technical Sessio

17 May 2017



Fish

Cam Stevens (Ph.D.)
Associate, Senior Aquatic Biologist

Government of Northwest Territories ASR Technical Session

17 May 2017 31



Assessment of Effects to Fish

Outline

- · Terms of Reference
- Traditional Knowledge Integration
- Valued Components
- Assessment Scope
- · Baseline Summary
- · Pathway Analysis
- Mitigation Measures
- Residual Effects Analysis

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Terms of Reference

- The Developer will discuss how potential direct and indirect Project effects (including cumulative effects) are likely to affect the Valued Components (VCs)
 - VCs include fish and fish habitat
 - Topics include fish habitat and fish harvesting
- The Developer will respond to the Adequacy Statement according to the assessment methodology and adequacy items set out by the review board

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7 May 2017

Incorporation of Traditional Knowledge

- Selection of Valued Components
- Delineation of geographic scope
- Baseline summaries e.g., species distributions, fishing activities, access trails, important fishing locations
- Identification of pathways
- Informed mitigation measures

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ASR Technical Session

17 May 2017



Valued Components

- Fish VCs identified for the Project include:
 - Arctic Grayling
 - Lake Trout
 - Northern Pike
 - Walleye
 - Whitefish species
- VCs represent
 - species harvested by local Tłįchǫ fishers
 - a variety of habitats that support the respective life histories

- Assessment endpoints include:
 - Self-sustaining and ecologically effective populations
 - Ongoing fisheries productivity
- Indicators include:
 - Habitat quantity and quality
 - Habitat connectivity
 - Fish abundance (based on survival and reproduction rates)



- Fish VCs identified for the Project include:
 - Arctic Grayling
 - Lake Trout
 - Northern Pike
- Walleye
- Whitefish species
- VCs represent
 - species harvested by local Tłįchǫ fishers
 - a variety of habitats that support the respective life histories

- Assessment endpoints include:
 - Self-sustaining and ecologically effective populations
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 - Habitat connectivity
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Scope of Assessment

Spatial Scale

- Project footprint, which was used to delineate a Regional Study Area (RSA)
- RSA includes
 - streams sections within 2 km of TASR
 - waterbodies with any portion within 2 km of TASR
 - any large watercourses and waterbodies near the TASR identified by the Tłıcho as traditional fishing locations

Temporal Scale

- Construction phase
 - period from the start of construction to the start of operation (approximately two to four years)
- Operation phase
 - period of operation and maintenance activities throughout the life of the Project, which is anticipated to be indefinite

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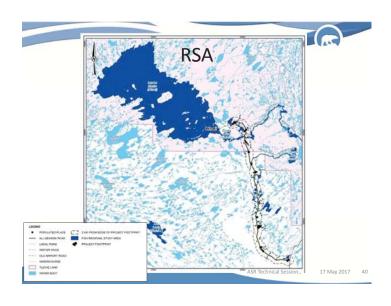
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Baseline - Fish and Fish Habitat

- · 18 fish species in RSA
- Highest diversity in Marian & (lower) la Martre Rivers
- Small streams
- Ninespine Stickleback
- Large rivers
 - Forage species
 - Sucker species
 - Northern Pike
 - Burbot
 - Arctic Grayling
 - Walleye
 - Whitefish species
- Productive fisheries



Baseline - Fish Harvesting

- Primarily subsistence fishing in RSA by local residents of Whati
- Traditional fishing locations include Lac La Martre, La Martre River, Boyer Lake, James River, James Lake, and others...



Baseline - Fish Harvesting

- Recreational fishing also in RSA, however access for non-NWT residents is limited
- Primarily at Lac la Martre through fishing lodge, and primarily catch and release



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Pathway Analysis

- 4 no linkage, 11 secondary, and 1 primary pathway
- Secondary pathways included:
 - Sediment release pathways
 - The crossing structure footprint
 - Riparian vegetation removal/damage at crossing locations
 - Changes to stream hydraulics and geomorphology
 - Introduction of dust/debris
 - Introduction of new or invasive species
 - Spills/leaks pathways
 - Water withdrawals
 - Wastewater, runoff, and debris from temporary camps

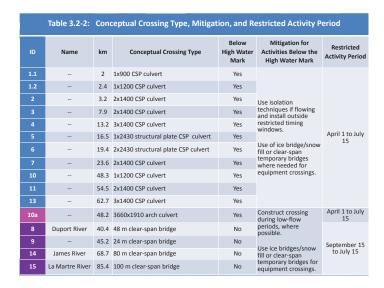
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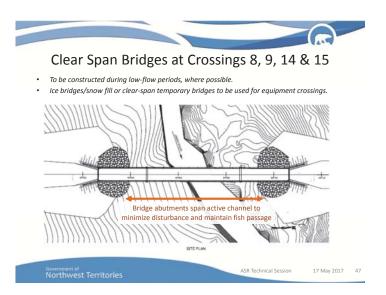
17 May 2017 44



Mitigation Examples

- Crossing structures (e.g., culverts, bridges) will be installed and maintained using best management practices (DFO 2016)
- Additional erosion mitigation (i.e., rock reinforcement) will be applied at crossings where needed to minimize future erosion
- Riparian areas will be maintained whenever possible
- Permanent bridges at major crossings will minimize disturbance below the high water mark and maintain fish passage
- Culverts will be designed and installed to avoid creating fish movement barriers
- Culverts will be embedded as appropriate to maintain species and habitat present
- DFO's self-assessment and request for review process will be followed





Primary Pathway

- Potential overexploitation of large-bodied fish populations due to improved road access
- Residual effects were examined by considering:
 - DFO and GNWT statistics on fish harvesting and recreational fishing
 - NWT and federal censuses on population statistics
 - TK of baseline fisheries, fishing pressure, and existing access trails in the RSA
 - government and scientific literature on effects of fishing pressure in the presence of road access

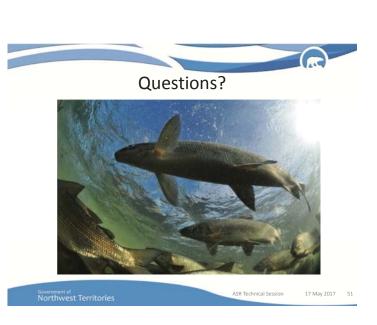


Residual Effects Analysis

- The proposed TASR will have negligible to low residual effects on existing fisheries within the RSA due to:
 - distance between TASR and a major population
 - · Most recreational fishers will not travel far to fish
 - relatively small population of 'fishers' in the NWT
 - many productive fisheries within RSA and elsewhere

Cumulative Impacts

- Reasonably Foreseeable Developments (e.g., Nico Project) are not expected to interact cumulatively with the residual effects of existing developments/activities and the Project, as additional access to water bodies within the RSA is not expected to occur as a result of these projects.
- Incremental and cumulative changes from the Project and other developments should not have a significant adverse impact on the ability of VC fish populations (Arctic Grayling, Lake Trout, Northern Pike, Walleye and Whitefish Species) to be self-sustaining and ecologically effective.





Wildlife

Dan Coulton (Ph.D.) Wildlife Biologist

17 May 2017 52



Assessment of Effects to Wildlife

Presentation Overview

- Adequacy Statement (PR#70) requirements
- Summarize key pathways
- Describe how TK was included
- Describe how Species at Risk considered, then focus on boreal and barren-ground caribou
- Focus on the Primary Pathways
- Key mitigation considered
- Review the analysis completed
- Present conclusions

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Assessment of Effects to Wildlife

Pathways of effects

- · Habitat loss
- Sensory disturbance
- Competition
- · Vehicle collisions
- Harvest from improved access
- Residual effects assessment

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Traditional Knowledge

Traditional Knowledge Study (PR#28) was considered to support the Assessment

- Valued components (e.g., caribou, moose)
- Study areas for caribou, moose and bison
- Existing conditions (VC distribution, baseline access)
- Effects pathways (e.g., increased access)
- Mitigation that reduces effects to wildlife habitat (environmental monitors)



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Wildlife Valued Components

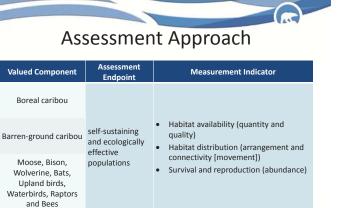
- · Barren-ground
- Boreal caribou
- · Bison, moose and wolverine
- Bats, birds and bees
- 14 wildlife VCs assessed
- All but moose are species at risk
- No species at risk plants or amphibians are known to be present in the area surrounding the Project

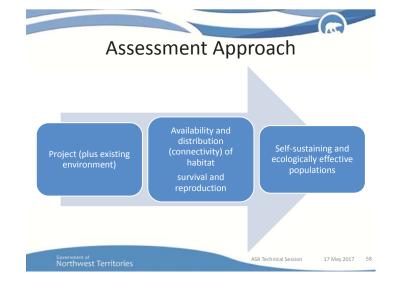
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17 May 2017 59

Assessment Endpoints

$\label{lem:self-sustaining} \textbf{Self-sustaining and ecologically effective populations:}$

- Related to abundance, distribution and ecological function.
- Provides ecological context for abundance, distribution and ecological function that is to be preserved.
- Includes interactions with humans (e.g., ability to harvest)
- Conservation science indicates these are key population properties.
- Species At Risk recovery strategy goal (e.g., Boreal caribou).
- Management strategy objectives (e.g. NWT Barren-ground caribou Management Strategy).

"caribou herd health and persistence [i.e., ability to be selfsustaining] and to remain an important aspect for lives of NWT residents [i.e., ecological effectiveness]".

Appropriate for ecological assessment and meeting the ToR

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Assessment Boundaries

Spatial Boundaries

- Footprint
- VC-specific study areas

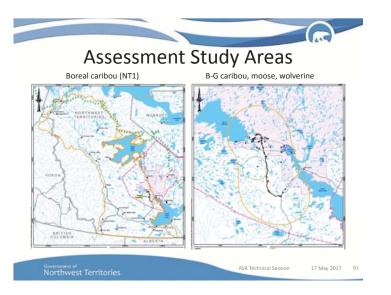
Temporal Boundaries

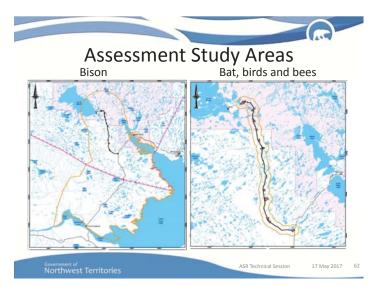
- Construction (<5 years)
- Operations (indefinite)

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Measurement Indicators

Measurement Indicators

- Habitat availability was quantitatively assessed using habitat suitability models and land cover data (SPOT 20 m)
- Habitat distribution (arrangement and connectivity of quality habitat) was evaluated qualitatively
- Survival and reproduction (abundance) was assessed qualitatively (increased harvest, vehicle strikes) and quantitatively (from changes in habitat availability)

Measurement Indicators assessed at

Base Case (Existing conditions)
Application Case (Base Case + Project)
Reasonably Foreseeable Development Case (Application Case + RFDs)

Cumulative effects were quantitative when possible, otherwise qualitative.

Effects Pathways Screening

Pathway analysis identifies the linkages (interactions) between Project and environment that may affect VCs.

 Considered 17 effects pathways including those identified in the Adequacy Statement and Traditional Knowledge Study (PR#28).

Key Project mitigation includes:

- Alignment follows existing disturbance (old road and burns) and limiting footprint.
- Minimize sensory disturbances (directed lighting, temporally and spatially restricted land clearing, wildlife right-of-way)
- · No hunting policy, blocking access roads to borrow sites.
- · Environmental Monitors present to help protect wildlife.

of ASR Technical Session 17 May 2017 63 Government of Northwest Territories

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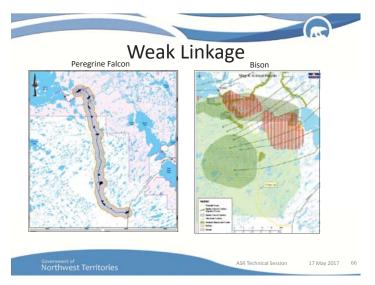
Primary Pathways

Pathways considered primary

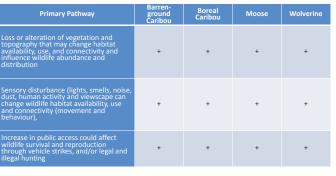
- loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and
- the destruction of roosting or hibernating bats (incidental take).
- the destruction of nests, eggs, and individuals of migratory birds (incidental take).
- sensory disturbance (lights, smells, noise, dust, human activity, viewscape).
- altered movement patterns, including any changes to interactions with other caribou herds.
- increase in public access could affect wildlife survival and reproduction through vehicle strikes, and/or legal and illegal hunting.

 use of linear corridors by bison may lead to range expansion and affect moose and
- loss of functional habitat due to competition with other wildlife species (in particular bison).

Not all VCs have strong linkage with the Project pathways or cumulative effects







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Assessment Results

Boreal caribou

66.6% of NT1 Range is undisturbed (by fire and development).

59.9% of Wek'èezhìı Portion of NT1 Range is undisturbed.

Project and RFDs mostly overlapping with burns.

NT1 Range Habitat Availability			
Suitability	Base Case (ha)	Change to Application	Change to RFD
Burns	10,159,286	<-0.0%	-0.2%
Development	3,697,637	0.1%	2.1%
Undisturbed	27,861,774	<-0.1%	-0.2%
Wek'èezhìı Portion of NT1 Range Habitat Availability			

Change to Suitability (ha) Application RFD 1,813,041 -0.2% -0.2% Development 40,840 11.0% 14.4% 2,778,883 -0.1% Undisturbed -0.1%



Assessment Results

Boreal caribou - Habitat Distribution

RFDs for Boreal Caribou in NT1 Range

- Fortune Minerals Ltd. NICO Mine
- Nailii Hydroelectric Project at La Martre River Falls
- Tłycho/Whatì Park Area at La Martre Falls
- Mackenzie Valley Highway
- · Prairie Creek Mine

RFDs will result in additional fragmentation but not beyond the adaptive capacity of boreal caribou.

Assessment Results

Boreal caribou -**Survival and Reproduction**

Habitat loss is small

Area is accessible through a network of trails at the Base Case.

Key construction mitigation includes:

- · No hunting by workforce
- Monitors to protect wildlife
- Blocking access roads



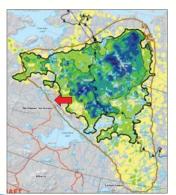
Assessment Results

Barren-ground caribou

Project does not overlap with core winter ranges of Bluenose East or Bathurst (Appendix G)

Regular or frequent interaction with the Project is not expected.

Supported by TK study (PR#28) – caribou only present in 1990s when herds were near peak abundance.



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Assessment of Effects to Wildlife

Barren-ground caribou

Effects only experienced when herd interacts with Project

11.7% of RSA is suitable habitat

RFDs are small and also overlap existing disturbance

Caribou RSA Habitat Availability			
Suitability	Base Case (ha)	Change to Application	Change to RFD
Moderate to high	117,677	-0.2	-0.2
Low to nil	883,843	~0.0	~0.0





Assessment Results

Barren-ground caribou - Habitat Distribution

RFDs for barren-ground caribou

- Fortune Minerals Ltd. NICO Mine
- Nailii Hydroelectric Project at La Martre River Falls
- Tłįchǫ/Whatì Park Area at La Martre Falls



RFDs are small and overlap existing disturbance. Increased fragmentation small and likely within the adaptive capacity of barren-ground caribou

Assessment Results

Barren-ground caribou -**Survival and Reproduction**

Likely only present when herds are large and more resilient

Habitat loss is small

Small increase in access relative to Base Case.

Key Project construction mitigation includes:

- No hunting by workforce
- Monitors to protect wildlife
- Blocking access roads



Assessment Summary

Assessment used multiple approaches and best practices to provide conservative and ecologically relevant impact predictions

Considered TK from the area about wildlife VCs, mitigation, and wildlife distribution

Caribou and wildlife habitat remains largely

- No fragmentation of populations
- No strong mechanism causing a long-term or irreversible change in reproduction or survival rates



17 May 2017

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Questions?





Socio-Economics

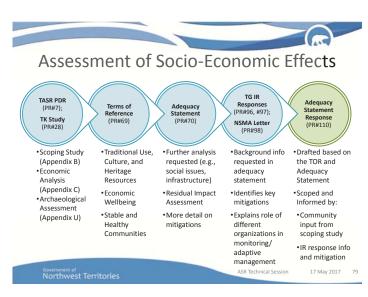
Jesse O'Brien (B.A. (hons), M.A.) Socio-Economist, ESIA Practitioner

Assessment of Socio-Economic Effects

Introduction

- Work to date informing the SEIA
- Incorporation of community knowledge and perspectives
- Summary of socio-economic topics covered in the SEIA
- SEIA results by topic, including mitigation and benefit enhancement measures
- Closing





Assessment of Socio-Economic Effects Scoping Study (PR#7 Appendix B) Potential Risks **J** Potential Benefits 1 · Increased industrial development **Employment opportunities**

- Economic/business development
- Access to lower-cost goods
- Enhanced mobility
- Reduced isolation
- Reliable, inexpensive transportation
- Improved transportation safety
- Impacts to local culture, harvesting
- Outsiders coming in
- Community absenteeism
- Changing community
- Access to drugs and alcohol
- · Impacts to vulnerable groups



Assessment of Socio-Economic Effects

VSEC	Topic	Indicator
		Employment and incomes
	Employment and Economy	Training
Economic	Employment and Economy	Business development
Wellbeing		Gross Domestic Product and government revenues
	Traditional and Non-Wage Economy	Time for traditional activities
	,	Traditional harvesting and country food consumption
	Population Sustainability	Out-migration, population mobility
		In-migration, population composition
	Use and Maintenance of Infrastructure	Housing
	ose and wantenance of inflastracture	Utilities
Challe and Harleton		Connecting families, alleviating isolation
Stable and Healthy Communities	Community Cohesion	Outsiders coming in
Communities		Social pressures
	Public Safety	Road safety Protective emergency and social services
		Trottetive, emergency and social services
	Facility and Miles and West	Food Security Cost of Living
	Equity and Vulnerability	Vulnerability
		Practice of traditional activities and culture
	To distance 111-2 and 111-11-5 116-	Quantity or quality of traditionally harvested resources
Traditional Use,	Traditional Use and Way of Life	Quantity or quality or traditionally narvested resources Perception of the land by traditional users
Cultural and Heritage	Harvesting	Competition for resources
Resources	Hai vesting	Archaeological sites
	Heritage and Cultural Resources	Culturally significant areas
		· Culturally significant areas



Assessment of Socio-Economic Effects

Employment and Economy Potential Effects

- Construction employment (266)
- Operations employment (6-8) ↑
- Training driven by demand for skilled construction labour 1
- Enhanced tourism opportunity 1
- Business development 1
- Change to the nature or viability of existing businesses ~
- GDP and government revenues ↑

Benefit Enhancements

- Maintain Economic Development Officer, supported by TREDWG
- Bid process prioritizing local content
- Continue existing training opportunities
- Maximizing on-the-job training during construction
- Tourism marketing through TREDWG strategies
- Adapting Whatì Store to changing demand



Assessment of Socio-Economic Effects

Population Potential Effects

- Stabilizing out-migration ↑
- Growth could lead to some potential for in-migration $^{\sim}$
- Growth, leading to increased pressure on housing and infrastructure

Mitigation / Enhancements

- · Coordination between Whatì and Behchokò Community Government to monitor community effects
- Local Housing Organization in Whatì addressing housing situation
- Recent and planned expansion of infrastructure to handle growth in



Assessment of Socio-Economic Effects

Community Cohesion Potential Effects

- Spread seasonal movements out

 •
- Connecting families, alleviating isolation 1
- Increased presence of outsiders \downarrow
- Increased access to drugs/alcohol ↓
- Exacerbation of social issues related to drugs/alcohol ↓

Mitigation / Enhancements

- Collaborative monitoring / management re: social issues:
 - Local Housing Organization
 - Whatì/ Behchokò Community Governments
 - Community Bylaw Officer

 - Whatì Inter-Agency Committee - TCSA programming / staff

 - GNWT Health and Social Services

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17 May 2017



Assessment of Socio-Economic Effects

Public Safety Potential Effects

- Reduce seasonal risk of accidents relative to winter road operation 1
- Reduced risk of accidents related to unstable winter road conditions 1
- Reduced seasonal demand for emergency services 1
- Enhanced search and rescue efforts, year-round emergency response 1
- Potential for year-round risk of traffic accidents during operation ψ
- Potential for construction accidents, demand for emergency services ψ

Mitigation / Enhancements

- Work with NorthwestTel to improve cell reception along TASR
- Community-led public education on road safety
- Community could keep track of road users during bad weather
- Establish a Community Bylaw Officer to support policing efforts
- Establish and enforce speed limits



Assessment of Socio-Economic Effects

Equity and Vulnerability

Potential Effects

- Improved food security 1
- Reduced cost of living 1
- Influencing the vulnerability of:
 - Those most sensitive to economic pressures 1 Youth I
 - Young Women \$\$
 - Elders I

Mitigation / Enhancements

- Continuation of Whati Inter-Agency Committee
- Coordination between Whatì and Behchokò community governments
- Continued engagement between TCSA and communities on plan to address social issues
- **GNWT Health and Social Services** funding for addressing social issues
- Programming around sexual health, safety awareness (e.g., hitchhiking)

Assessment of Socio-Economic Effects

Responses from the TG and input from GNWT have shaped

Residual effects classification less meaningful where there is

Monitoring and management of effects becomes much more

Much work has gone into planning already, and monitoring

authorities are in place (e.g., TCSA, CGW, WIA, GNWT HSS)

Identification of potential effects based on community

great uncertainty around the magnitude of an effect

mitigations and benefit enhancements



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Assessment of Socio-Economic Effects

Traditional Use, Way of Life and Harvesting

Potential Effects

- Enhanced year-round access 1
- Increased harvesting pressure \sqrt{
- Changes to traditional way of life, perceptions of the land
- Changes to availability of traditional resources ****

Mitigation / Enhancements

- Maintain K-12 language program in
- Mediums for youth to express themselves, communicate in Tłycho
- Minimize disturbance
 - Confine TASR corridor to 60 m, where

 - possible Follow existing trail and areas previously burned in recent fires Locate camps, laydown areas within borrow pits and the ROW, where possible
- Management of cabin construction on Tłycho lands
- Application of land use guidelines
- Enforcement of NWT hunting regs

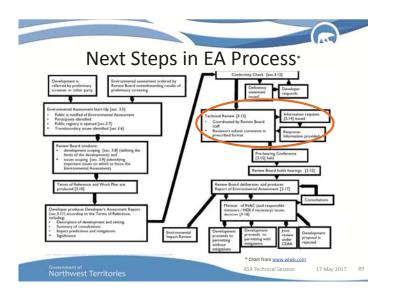
important in these cases

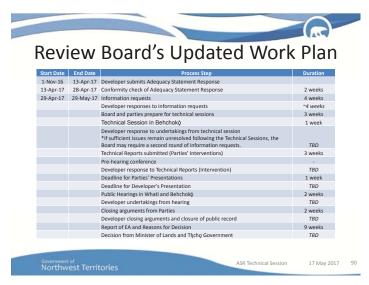
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Closing

scoping







GNWT's Role through EA process

- GNWT is considered the Developer
- GNWT depts. work together internally
 - Only the Applicant (INF) will submit material to MVEIRB
- · GNWT-Lands has a dual role
 - Internal GNWT coordinator
 - Decision maker under s.130 MVRMA



- Thank you for listening to today's presentations
- Lunch will be from 12:15 1:00 pm
- After lunch will be the open Q&A session
 - Technical experts can clarify details from ASR
 - Developer can answer questions in advance of Information Requests deadline
 - Willing to hear about any outstanding concerns regarding the proposed project

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17 May 2017 91

ASR Technical Session

17 May 2017 92



Thank you!

